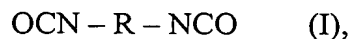


WHAT IS CLAIMED IS:

1. A process for the manufacture of a diisocyanate of the formula (I)



wherein

R represents a (cyclo-)aliphatic or aromatic hydrocarbon group having up to 15 carbon atoms, provided that at least two carbon atoms are arranged between the two NCO groups,

by phosgenation of the corresponding vaporous diamine of the formula (II)



wherein

R' represents a (cyclo-)aliphatic or aromatic hydrocarbon group having up to 15, provided that at least two carbon atoms are arranged between the two amino groups,

in which the vaporous diamine, optionally rarefied with an inert gas or with the vapors of an inert solvent, and phosgene are heated separately to temperatures of from about 200°C to about 600°C, mixed and reacted in a tube reactor having a number $n \geq 2$ of nozzles directed parallel to the axis of the tube reactor arranged in the tube reactor, the diamine-containing stream being fed into the tube reactor through the n nozzles and the phosgene stream being fed into the tube reactor through remaining free space.

2. The process according to Claim 1, wherein the phosgene stream is fed into the tube reactor through the n nozzles and the diamine-containing stream is fed into the tube reactor through the free space.

3. The process according to Claim 1, wherein the diamine of formula (II) is chosen from isophorone diamine (IPDA) or hexamethylene diamine (HDA) and bis(p-aminocyclohexyl)-methane.

5 4. The process according to Claim 1, wherein the diamine of formula (II) is a mixture of 2,4-/2,6-toluene diamine.

5. The process according to Claim 4, wherein the diamine of formula (II) is chosen from 2,4-/2,6-toluylene diamine mixtures of isomer ratios of about 80/20
10 and about 65/35 and pure 2,4-toluylene diamine isomers.

6. The process according to Claim 1, wherein R' represents a (cyclo-) aliphatic or aromatic hydrocarbon group having 4 to 13 carbon atoms.

15 7. The process according to Claim 1, wherein the vaporous diamine, optionally rarefied with an inert gas or with the vapors of an inert solvent, and phosgene are heated separately to temperatures of from about 250°C to about 450°C.